RESTORING REGULATORY CREDIBILITY AND PREVENTING "REPO RUNS": A CAUTIONARY TALE

HARRY McVEA[1]

***Abstract**:*

In the aftermath of the global financial crisis ('GFC'), policy-makers and regulators have been engaged in Herculean efforts to restore their tarnished reputations. These efforts have involved jettisoning much of their flawed ideological baggage of old, rooted in a belief about the self-correcting nature of markets and the ability of financial institutions to police themselves, and, in turn, building new, more muscular regulatory and supervisory regimes. This ongoing process is explored through the lens of a high-profile facet of shadow banking, namely the regulation of sale and repurchase agreements (so-called 'repos'). Here, regulators have set out to address a key vulnerability associated with the maturity mismatch between the short-term liabilities of the repo borrower and its longer-term assets, which has the potential to trigger a so-called 'repo run'. Through a review of a series of highly problematic reform options, the discussion indicates that there is a danger that regulators will repeat the mistakes of the past by substituting their misplaced faith, pre-GFC, in the self-correcting power of markets, with a misguided conviction, post-crisis, in their capacities to build regulatory regimes which can contain the risks associated with modern-day financial markets. It is suggested that such over-confidence is liable to lull us into a false sense of security about how robust these regimes really are, and to cause regulators to shirk some of the more difficult questions which remain to be addressed.

1. Introduction

The global financial crisis ('GFC') represented not just a damning indictment of the rapaciousness of modern-day financial markets, it also exposed glaring weaknesses in the way in which financial market policy was formulated and financial markets were regulated. In particular, opprobrium was heaped on policy-makers and regulators for designing and

[1] Professor of Law, University of Bristol, and Senior Associate Research Fellow, Institute of Advanced Legal Studies, University of London. I would like to thank Ardavan Arzandeh, Pat Capps, Marc Moore, and the EBLR's anonymous reviewer for their helpful comments on earlier versions of this article. Any remaining errors are my own.

implementing regulatory and supervisory regimes which were too 'light touch', and which failed, spectacularly, to align the private interests of the financial institutions subjected to them, with the public good. In some quarters, this criticism extended to claims that regulators had been 'captured' by the financial services sector over which they exercized authority.[2] More broadly, however, a significant proportion of the blame for the crisis was attributed to 'regulatory failure'.[3] In this respect, few regulatory agencies—domestic, regional (ie 'EU'), or international––escaped public censure.

In the United Kingdom, the Financial Services Authority ('FSA')—in its day, one of the world's most innovative regulators—was, post-crisis, subjected to a range of excoriating criticisms. In relation to Northern Rock, the FSA was said to have 'fallen short of high professional standards in the execution of its supervisory approach'[4] and to have 'systematically failed in its regulatory duty to ensure that [the bank] would not pose a systemic risk.'[5] And, in relation to its overly supine approach to regulation more generally, it was claimed that the regulator had prioritized 'systems and processes' over 'challenging business models and strategies';[6] and, moreover, that it had exhibited neglect over the build-up of macro-prudential risk by focusing on the 'supervision of individual institutions, [at the expense of] wider sectoral and system-wide risks.'[7] These failures were further compounded by the identification of serious weaknesses in the 'tripartite' architecture, of which the FSA—as a 'unified regulator'—was a principal part. According to the then Coalition Government, the Tripartite system failed to: (i) identify system-wide problems that lay dormant in the financial sector; (ii) take steps to mitigate

[2] In the US context, see, eg, Simon Johnson and James Kwak, *13 Bankers: The Wall Street Take Over and the Next Financial Meltdown* (New York: Pantheon, 2010). In the UK context, see, eg, Sir Mervyn King, *Joint Committee on the draft Financial Services Bill: Evidence* (16 December, 2011) 206. And, at the international level, see, eg, Andrew Baker, *Restraining regulatory capture? Anglo-America, crisis politics and trajectories of change in global financial governance* 86(3) International Affairs 647 (2010).

[3] For example, see, House of Lords, House of Commons, *Changing Banking for Good: Report of the Parliamentary Commission on Banking Standards* (First Report of Session 2013–14 Volume I: Summary, and Conclusions and recommendations, June, 2013, HL Paper 27-I HC 175-I*) 11; Financial Crisis Inquiry Commission, *Financial Crisis Inquiry Report* (2011) (available at http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic final-report_full.pdf) (hereinafter "FCIC Report") xviii; House of Commons Treasury Committee, *Banking Crisis: dealing with the failure of the UK banks* (Seventh Report of Session 2008–09, HC 416) 3; and Robert C Altman, *The Great Crash, 2008* (Jan-Feb), Foreign Affairs 2, 8 (2009).

[4] The Turner Review: *A Regulatory Response to the Global Banking Crisis* (London: FSA, March 2009) (para 2.6(ii)) (hereinafter, "Turner Review") (para 2.7.(i)).

[5] House of Commons Treasury Committee, *The Run on the Rock* (Seventh Report of Session 2007–08, HC (2007-08) 56-I (footnote omitted).

[6] Turner Review, *supra* n. 4.

[7] *Ibid*., para 2.6(ii).

these problems before they led to significant financial market instability; and (iii) deal adequately with the unfolding crisis, especially during the summer of 2007.[8] Following sweeping changes to the tripartite system, the *coup de grace* for the FSA was its abolition in April 2013.[9]

In the United States, regulatory arrangements and regulators fared little better. Regulatory arrangements were, for example, widely regarded as having been overly fragmented, focusing more on individual firms than on system-wide systemic risk. According to the US Government Accountability Office ("GAO"), the 2007-2009 financial crisis highlighted the 'lack of an agency or mechanism responsible for monitoring and addressing risks across the financial system'[10] and illustrated how the 'fragmented' nature of US regulation had 'contributed to failures … to adequately protect consumers and ensure financial stability.'[11] Federal regulators, meanwhile, were castigated for fostering a culture of 'pervasive permissiveness',[12] and for 'forging a deregulatory climate that allowed reckless loans to flourish'.[13] The Federal Reserve, in particular, drew fire for its 'pivotal failure to stem the flow of toxic mortgages'[14] and for its failure to fulfill its 'statutory obligation to establish and maintain prudent mortgage lending standards [as well as] to protect against predatory lending.'[15] In addition, the Securities and Exchange Commission ('SEC'), long regarded as a competent and well-resourced regulator,[16] attracted criticism for its 'record of regulatory abdication' and poor decision-making,[17] of which the 'Madoff Affair' was perhaps the most high-profile example.[18]

---

[8] HM Treasury, *A New Approach to Financial Regulation: Judgement, Focus And Stability* (July 2010, CM 7874) (paras 1.3-1.6).
[9] See, Eilis Ferran, *The Break-up of the Financial Services Authority* 31(3) Oxford Journal of Legal Studies 1 (2011).
[10] GAO, *Financial Regulation: Complex and Fragmented Structure Could Be Streamlined to Improve Effectiveness* (Feb. 2016) (GAO-16-175) (Highlights).
[11] GAO, *Financial Regulation: A Framework for Crafting and Assessing Proposals to Modernize the Outdated U.S. Financial Regulatory System* (Jan. 2009) (GAO-09-216) 55; and Michael W Taylor, *'Twin Peaks' Revisited: A Second Chance for Regulatory Reform* (Centre for the Study of Financial Innovation, Sept. 2009) 4.
[12] FCIC Report, *supra* n. 3, xvii.
[13] Patricia A McCoy, Andrey D Pavlov, and Susan M Wachter, *Systemic Risk Through Securitization: The Result of Deregulation and Regulatory Failure* 41 Conn L Rev 1,327, 1,343 (2009).
[14] FCIC Report, *supra* n. 3, xvii.
[15] FCIC Report, *ibid*., 101.
[16] Robert A Prentice, *The Inevitability of a Strong SEC* 91 Cornell L Rev 775 (2006) ('most commentators consider the SEC an extremely successful regulator' (800, footnote omitted)).
[17] See, eg, McCoy *et al*, *supra* n. 13, 1,344, and 1,357; and the FCIC Report, *supra* n. 3, 187, and 291.
[18] See, eg, Cheryl Nichols, *Addressing Inept SEC Enforcement Efforts: Lessons from Madoff, the Hedge Fund Industry, and Title IV of the Dodd-Frank Act for US and Global Financial Systems* 31 Nw J Int'l L & Bus 637, 661 (2011).

Unsurprisingly, similar regulatory deficiencies were also detected at the EU and international levels. In Europe, the 'de Larosière Report'[19] claimed that EU arrangements placed 'too much emphasis on the supervision of individual firms, and too little on the macro-prudential [risk]';[20] that the regulatory framework 'lack[ed] cohesiveness';[21] and that there was 'too much scope for different interpretations to commonly agreed goals.'[22] Moreover, the Report identified a lack of openness amongst regulators during the crisis, resulting in policy-makers and regulators failing to exchange information and engage in collective decision-making,[23] and it went on to criticize the crisis-prevention features of EU supervisors as 'not fit for purpose.'[24] At the international level, meanwhile, significant failures of global coordination were identified amongst international agencies such as the International Monetary Fund ('IMF'), the Financial Stability Forum ('FSF') (since replaced by the Financial Stability Board ('FSB'), and the G8 (now replaced by the G7).[25] In addition, governance gaps,[26] weak global institutions,[27] and 'the absence of a global rule-making authority [capable of overseeing] global private financial institutions and processes',[28] were all blamed for creating an environment in which financial market risks were allowed to build up unchecked.

It is suggested here, that underpinning many of these more targeted criticisms was the existence amongst policy-makers and regulators of a shared, but hubristic faith in the 'self-correcting nature of [financial] markets and the ability of financial institutions to effectively police themselves.'[29] An instructive example of the way in which this 'free-market' ideology had become dangerously embedded within the culture of financial services regulation, is vividly

[19] *EU High Level Group on Financial Supervision* (Feb. 2009) chaired by Jacques de Larosière.
[20] *Ibid*., para 153.
[21] *Ibid*., para 102.
[22] *Ibid*., para 108.
[23] *Ibid*., para 26.
[24] *Ibid*., paras 26 and 159.
[25] *Ibid*., para 31. And according to the Turner Review, 'the IMF, like other institutions, failed to challenge what in hindsight looks like a clearly mistaken set of propositions': *supra* n. 4, para 2.6(iii).
[26] Ian Goldin and Tiffany Vogel, *Global Governance and Systemic Risk in the 21st Century: Lessons from the Financial Crisis* 1 Global Policy 4, 6 (2010).
[27] *Ibid*., 7.
[28] *Ibid*., 6.
[29] FCIC Report, *supra* n. 3, xviii. According to Lord Turner, institutions 'such as the IMF … set out a confident story of a self-equilibrating system' based on 'market completion as the cure to all problems' and rooted in a broader 'belief system [which] tended to exclude the possibility that rational profit seeking by professional market participants might generate rent extraction and financial instability rather than social benefit'. Lord Turner, *Reforming Finance: Are we Being Radical Enough?* (2011 Clare Distinguished Lecture in Economics and Public Policy, 18 Feb. 2011).

illustrated by the remarks of Lord Turner, former Chairman of the FSA, in his Review of the crisis. There, he laid bare the Authority's pre-crisis 'intellectual assumptions about the self-correcting nature of financial markets',[30] and the fact that the FSA's regulatory and supervisory approach was based on 'a sometimes implicit but at times quite overt philosophy which believed that … [m]arkets [were] in general self-correcting, with market discipline a more effective tool than regulation or supervisory oversight through which to ensure that firms' strategies [were] sound and risks [were] contained.'[31]

The degree to which this free-market ideology had suffused policy-making and helped to foster a climate that was instinctively sceptical towards regulatory intervention, is further illustrated by the now infamous exchange between former Federal Reserve Chairman, Alan Greenspan, and House Oversight Committee Chairman, Henry Waxman, before the House of Representatives Oversight Committee on October 23, 2008.[32] There, Greenspan, a long-time apologist for the deregulatory and self-regulatory agenda that permeated so much financial services policy-making and regulation in the years preceding the crisis, admitted in his opening statement to the Committee, that: 'those of us who have looked to the self-interest of lending institutions to protect shareholders [sic] equity, myself especially, are in a state of shocked disbelief.'[33] Later, in questioning, Greenspan was asked by Waxman whether his ideology had 'pushed' him 'to make decisions that he wished he had not made.'[34] In response, Greenspan stated:[35]

> GREENSPAN: [Y]es, I found a flaw, I don't know how significant or permanent it is, but I have been very distressed by that fact…
>
> WAXMAN: You found a flaw? …
>
> GREENSPAN: I found a flaw in the model that ... defines how the world works, so to speak …

[30] Turner Review, *supra* n. 4, 6. These intellectual assumptions are spelled out more fully in the Review at para 1.4.
[31] *Ibid*., para 2.7(i). See also Brian Quinn, *The Failure of Private Ordering and the Financial Crisis of 2008* 5 NYUJL & Bus 549, 614 (2009); Maurice Stucke, *Lessons from the Financial Crisis* 77 Antitrust LJ 313, 314 (2011); and Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets* 2 Harvard Business Law Review 235, 237 (2012).
[32] *The Financial Crisis and the Role of Federal Regulators: Hearing Before the House Committee on Oversight and Government Reform, 110th Cong 2nd Session* (Oct. 23, 2008) (https://house.resource.org/110/org.c-span.281958-1.pdf).
[33] *Ibid*., 12.
[34] *Ibid*., 46.
[35] *Ibid*.

> WAXMAN: In other words, you found that your view of the world, your ideology, was not right, it was not working.
>
> GREENSPAN: Precisely. That's precisely the reason I was shocked, because I had been going for 40 years or more with very considerable evidence that it was working exceptionally well.

Unsurprisingly, in the aftermath of the GFC, policy-makers and regulators have sought to jettison much of their flawed ideological baggage of old, and to rebuild their damaged credibility by constructing new, more muscular, regulatory and supervisory regimes premised on the capacity of these frameworks to withstand systemic shocks. The scale and ambition of these reform efforts are, in many respects, impressive. Broadly speaking, having initially taken aim at deficiencies in retail banking regulation and supervision,[36] financial services policy-makers and regulators have, more recently, turned their attention to the 'shadow banking' sector.[37] According to Comotto, a leading UK commentator, shadow banking represents a form of *market finance* which 'decomposes the process of credit intermediation into an articulated sequence or *chain* of discrete operations typically performed by separate specialist non-bank entities which interact across the wholesale financial market.'[38] An important and increasingly high-profile facet of the shadow banking sector is 'securities financing transactions' ('SFTs'), of which 'sale and repurchase agreements' —or 'repos'—are the most well-known.

This article sets out to explore and assess the scale of the challenges faced by policy-makers and regulators in attempting to rebuild their tarnished reputations in the aftermath of the GFC. It does so through the lens of proposed (or recently adopted) regulatory measures designed to address a key vulnerability associated with repo transactions—namely, the maturity mismatch between the short-term liabilities of a repo borrower and its longer-term assets which has the potential to trigger a so-called 'repo run'.[39] In an important series of studies that have been

[36] See, eg, the introduction of Basel III (which was designed to restore retail banks' capital cushion), and various structural reforms aimed at segregating retail banking from investment banking.
[37] See generally, Financial Stability Board (FSB), *Shadow Banking: Strengthening Oversight and Regulation Recommendations of the Financial Stability Board* (27 Oct. 2011); and European Commission, *Green Paper Shadow Banking* (Brussels, 19/3/2012) (COM(2012) 102 final). Financial Stability Board (FSB), *Strengthening Oversight and Regulation of Shadow Banking: An Integrated Overview of Policy Recommendations* (Consultative Document 2012).
[38] Richard Comotto, *Shadow Banking and Repo* (Report for the International Capital Market Association's (ICMA) European Repo Council, 20th March 2012) (para 2.3) (emphasis in the original).
[39] The concept is widely associated with Gorton and Metrick's seminal work on shadow banking, see, eg, Gary Gorton and Andrew Metrick, *Regulating the Shadow Banking System* Brookings Papers on Economic Activity, 261 (2010) (referring to 'run on repo').

highly influential in policy-making circles, Gary Gorton and Andrew Metrick have contended that a repo run was a key component of the GFC.[40] These studies have, admittedly, been criticized for offering an incomplete and partial picture of the forces at work during the crisis.[41] Evidence garnered by other commentators has revealed that in some repo markets – principally those backed by high quality collateral – haircuts barely moved,[42] and that it was the collapse of the short-term funding of securitized asset-backed commercial paper (ABCP) that represented the focal point for the crisis.[43]

Nevertheless, evidence of some dysfunction in repo markets at the time of the crisis, as well as ongoing inter-connectedness and complexity within financial markets more generally, underscores the continuing existence of a key vulnerability within the shadow banking sector which today is (rightly) regarded as an important cause for regulatory concern.[44] What is more, although post-crisis regulatory reforms directed at bolstering bank capital, in combination with unconventional monetary policies, have since had the indirect effect of reducing the excessive use of repos and of shrinking the supply of collateral available for repo transactions,[45] the threat of a repo run remain credible. Most pertinently, the shortage of safe debt that the above developments have engendered is liable to result in the creation of new forms of short-term debt that are backed by supposedly 'safe' private (inside) collateral.[46] As confidence returns to financial markets, repo cash-lenders are liable to become more sanguine about their attitude

[40] See, eg, Gorton and Metrick, *ibid*., and Gorton and Metrick, *Securitized Banking and the Run on Repo*, 104 Journal of Financial Economics 425 (2012).
[41] Arvind Krishnamurthy, Stefan Nagel, and Dmitry Orlov, *Sizing up Repo* 69(6) Journal of Finance 2381 (2014).
[42] Adam Copeland, Antoine Martin, and Michael Walker, *Repo Runs: Evidence from the Tri-Party Repo Market* 69 *Journal of Finance* 2,343, 2,344 (2014). See also, Benjamin Munyan, *Regulatory Arbitrage in Repo Markets* (Office of Financial Research Working Paper, 29 Oct. 2015) (arguing that runs were perhaps only the symptom of more general deleveraging rather than a run on repo and that more evidence is needed) (45).
[43] Krishnamurthy, *et al*, *supra* 41.
[44] See, eg, FSB, *Strengthening Oversight and Regulation of Shadow Banking Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos* (29 Aug. 2013); and European Securities and Markets Authority ("ESMA") (No 1) *Trends, Risk and Vulnerabilities* 35 (2013).
[45] Jay Cullen, *The Repo Market, Collateral and Systemic Risk: In Search of Regulatory Coherence* in I Chiu & I MacNeil (eds) Research Handbook on Shadow Banking (Cheltenham: Elgar, 2018) 85, 1-4-109.
[46] 'A shortage of safe outside collateral may incentivize the creation of excessively-complex credit securities, or to stretch existing collateral, to be used in SFTs.' *Ibid*., 108 (citing John Geanakoplos and William Zame, *Collateralized Security Markets* Levine Working Paper (2010)). See also Gary Gorton and Tyler Muir, 'Do New Post-Crisis Laws and Regulations Make the Financial System Riskier?' (www.theclearinghouse.org/banking-perspectives/2016/2016-q1-banking-perspectives/articles/do-post-crisis-regulations-increase-financial-system-risk) (2016) (arguing that when there is a shortage of government-produced safe debt, the private sector manufactures close substitutes). Significantly the IMF has already called for "some flexibility in the definition of acceptable safe assets". IMF, *Global Financial Stability Report* (April 2012), 115.

towards such collateral, and, buoyed along by this upturn in market sentiment, may incline towards less rigour in their decision-making and increased collateral re-use than is in fact socially optimal. From this perspective, the prospect of a repo run remains a pressing regulatory issue – particularly where a sudden shock results in market wide retrenchment involving an inevitable scramble to unwind correlated positions.

Set within the crucible of specific regulatory reforms designed to address repo runs, the article observes that both the absence of a 'silver-bullet' option, and the evincible weaknesses exhibited by each of the principal reform measures under review, underscores the existence of an inconvenient truth: namely, that there are very real limits to what regulation (of whatever stripe) can realistically achieve in preventing future financial market disruption in the face of significant correlated failures.

The central and distinctive claim advanced on the back of this discussion is that, rather than reveal a clear case for regulatory optimism, policy-makers and regulators are today faced with a financial system which far-outstrips their ability to regulate it—and, in particular, the uncertain and unknowable frontiers of future systemic risk which lie dormant within it. Since there is much about today's financial markets and financial regulation that is experimental, it is suggested that to assume that the risks that financial markets exhibit can be assessed and calibrated in any meaningful sense, is to replace one form of pre-crisis hubris (associated with policy-makers' and regulators' beliefs in the power of self-correcting markets), with a more modern, yet equally dangerous, form of post-crisis hubris (that is, the misplaced belief by policy-makers and regulators in their capabilities to construct regulatory regimes which successfully cabin systemic risks and eschew the need for costly public-sector bailouts). It is suggested that such post-crisis over-confidence is not only liable to lull us into a false sense of security about how robust these regimes really are, but also to cause policy-makers and regulators to shirk some of the more difficult and fundamental questions which remain to be addressed. Crucial in this respect, is the need to determine what sort of financial markets best serve society, and what we are willing to pay for when things inevitably go awry again. While discussion of these particular issues lies beyond the scope of the current work, the fact that they are raised nevertheless helps to show us what ought to be our future direction of travel.

The discussion which follows seeks to explore the above ideas by explaining the key characteristics of repo transactions (Section 2) and the main problem—ie a repo run—to which they give rise (Section 3). The article then proceeds to explore and assess a number of regulatory options (both proposed or adopted) designed to mitigate the risk of a repo run (Section 4), before, finally, drawing conclusions—both specific and general (Section 5).

2. What are repo markets?

In essence, repos are a form of secured—or collateralized—loan, whereby a cash-borrower sells securities to a cash-lender, but agrees to repurchase the same, or similar, securities at a higher price at a future date (usually somewhere between one day and one month later).[47] The price difference between the sale of the securities and their repurchase is referred to as the 'repo rate', and includes a fee paid by the cash-borrower for gaining access to the cash. The sale of the securities to the cash-lender represents the collateral 'posted' by the cash-borrower (eg a hedge fund) and provides a form of protection for the cash-lender (eg an investment bank) in the event that the cash-borrower becomes insolvent, or is otherwise unwilling to return the cash on the agreed date.

It follows, therefore, that the quality of the collateral posted is critical to the smooth operation of repo markets.[48] If excessive collateral is posted by the cash-borrower, the borrower loses the opportunity to raise additional cash or engage in additional leverage; by contrast, if insufficient collateral is posted, there is a risk that the cash-lender will be 'out-of-pocket' in the event that the borrower defaults on the agreement and the collateral liquidated does not cover the cost of the cash loaned. Accordingly, it is crucial that: (i) the initial collateral requirements are well-judged; and (ii) the lender continues to accurately value the collateral during the repo-term in order to identify whether it remains sufficient to cover the borrower's liabilities. This is primarily achieved through two mechanisms. First, the lender imposes an 'initial margin' or

[47] This section draws on Euroclear, *Understanding Repo and the Repo Markets* (March 2009).
[48] Comotto, *supra* n. 38 ('collateralised funding, prudently managed, reduces risk at source') (para 11.6).

'haircut' which serves to over-collateralize the repo cash-lender,[49] such that the purchase price of the repo is less than the market value of the collateral posted.[50] Secondly, the collateral posted is regularly valued by the lender during the repo period. If the value of the collateral increases, any excess capital is returned to the cash-borrower, whereas any deterioration in the value of the collateral results in a 'margin call' whereby the borrower is required to make available additional collateral to make good the reduction in the value of the assets initially posted—a process referred to as a 'variation margin'.

There are various perceived benefits associated with the use of repo transactions as a means of cash-lending. First, irrespective of whether repo collateral is merely 'pledged' (as is typically the case in the US) [51] or is transferred by way of an outright sale (as is the more common practice in the UK and Europe),[52] in the event that the cash-buyer defaults on the repurchase agreement, the cash-lender is legally entitled to dispose of the assets to recover either some, or all, of the cash loaned. What is more, there is scope for the collateral to be redeployed during the term of the repo agreement for the purposes of selling it to a third party, or, indeed, for different repoing purposes—thus converting a cash-lender into a cash-borrower.[53] That said, a party utilising collateral in this way is under an obligation to repurchase the securities, or their equivalent, so as to be able to return the collateral to the original counterparty.

Secondly, provided the cash-borrower remains solvent, the cash-lender is not exposed to the risk of any depreciation in the value of the assets during the period of the repo. In other

[49] Haircuts are expressed as the percentage difference between the market value of the collateral security and the cash to be loaned through a repo (so a haircut of 5 % means that a security worth £100 can be 'repoed-out' for £95). An initial margin is a percentage premium added to the market value of the security that is being offered as collateral in a repo or securities lending transaction. European Parliament, *Shadow Banking – Minimum Haircuts on Collateral* (Note, July 2013, IP/A/ECON/NT/2012-29. However, '[w]here the probability of default and the likelihood of having to liquidate collateral are remote, no haircut/initial margin is typically imposed': Richard Comotto, *Haircuts and Initial Margins in the Repo Market* (ICMA's European Repo Council, 8 Feb. 2012) para 3.8.
[50] Haircuts are seen as potentially useful in preventing the build-up of excessive leverage by acting in a manner similar to reserve requirements on deposits. *Ibid*., para 1.11
[51] Here, although possession of the asset passes to the other party (the cash-lender), ownership of the asset is retained by the cash-borrower. Accordingly, where repo collateral is pledged without the existence of a safe harbour, the cash-lender would be exposed to the vagaries of the automatic stay in the event of the cash borrower's bankruptcy/insolvency.
[52] Here, the cash-lender acquires both the legal and the beneficial title to the collateral and, as a result, has a proprietary right in relation to the asset such that they are retained by the cash-lender in the event of the collateral-giver's insolvency. In such circumstances, the automatic stay has limited effect, since the cash lender has legal title to the asset and therefore has no need for a statutory safe harbour.
[53] Where collateral is pledged, the exact position is governed by the contract governing the pledge. Operational and regulatory limits also constrain rehypothecation.

words, if the value of the posted collateral deteriorates, it is the cash-borrower that bears the loss, as it is contractually committed under the terms of the repo agreement not only to repurchase the posted collateral on a future date, but to do so at a stipulated price (comprising the original sale price plus a fee for the use of the lender's cash).

Although the size of the repo market has shrunk significantly from its peak of 2008,[54] more recently, it has been estimated to be in the region of €15-20 trillion globally.[55] There are many motivations for transactions of this nature, all of which are rooted in the belief by both parties—and, indeed, all other parties in subsequent transactions based on the initial agreement—in some form of commercial benefit arising from the arrangement, such as liquidity management, hedging, or benefits from short selling. More broadly, such transactions are widely seen as helping to promote market completeness, through improvements in price discovery and enhancements to market liquidity.[56] Furthermore, by helping to 'mobilize the wholesale capital funding required by [retail] banks and other lenders', repo markets are said to play a pivotal role in facilitating financial markets' broader task of channelling funds from savers to borrowers.[57] In particular, it is claimed that since repo markets provide an efficient and diversified source of finance for financial intermediaries, this 'lowers the cost of financial services to investors and issuers'.[58] In turn, this diversification is thought to 'create[] a deeper and more robust market', and, in so doing, to help reduce systemic risk.[59]

In essence, therefore, the secured (or collateralized) aspect of the repo market seeks to reduce the risk associated with lending, making it an attractive arrangement for risk-averse cash-lenders. Since this reduced risk leads to lower borrowing costs, it is not surprising that repos represent an important source of cheap finance and leverage for wholesale markets. However, notwithstanding the (widely-held) view that repo markets offer a number of benefits, there are

---

[54] Bloomberg, *The Repo Market* (http://www.bloombergview.com/quicktake/the-repo-market).
[55] Richard Comotto, *A Supplementary Note on the Systemic Importance of Collateral and the Role of the Repo Market* (ICMA's European Repo Council, 7 May, 2013) (para 4.8).
[56] Tobias Adrian, Brian Begalle, Adam Copeland, and Antoine Martin, *Repo and Securities Lending* Federal Reserve Bank of New York Staff Reports (Staff Report No. 529 Dec. 2011, Revised Feb. 2013) 1 (www.newyorkfed.org/medialibrary/media/research/staff_reports/sr529.pdf).
[57] *Ibid*., para 1.2.
[58] ICMA, 'FAQ: 3. Why is the repo market so important and why has the use of repo grown so rapidly?' http://www.icmagroup.org/index.php/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/frequently-asked-questions-on-repo/3-why-is-the-repo-market-so-important-and-why-has-the-use-of-repo-grown-so-rapidly/ .
[59] *Ibid*.

increasing regulatory concerns about the potential fragility of repo markets and their ability to disrupt intermediation chains within the wider shadow banking system.[60] And, as noted earlier, a number of studies now support the contention that a repo run was an important component of the recent financial crisis.[61] The next section traces these regulatory concerns by identifying and exploring a key vulnerability within repo markets which has the capacity to trigger and subsequently transmit systemic risk by way of a repo run.

3. The problems with repo markets: repo runs

Since the use of collateralization in repo arrangements (via 'initial' and 'variation' margins) represents a routine and highly effective *ex ante* method by which a cash-lender may protect itself from counterparty default, in the vast majority of cases the interests of both the cash-lender and cash-borrower will be fully aligned and their respective concerns fully allayed. This is particularly the case where the collateral used is highly liquid, such as government bonds.[62] However, the use of initial and variation margins are by no means a 'fail-safe' way of ensuring that the collateral-taker is fully protected and that the financial system is rendered immune from systemic risk. Instead, since short-term collateralized loans are highly unstable during times of market turbulence,[63] collateral readjustments of this nature have the capacity to trigger "bank-like" runs—so-called repo runs—which disrupt the smooth operation of the shadow banking system, and, potentially, the traditional banking sector, too.

The concept of a repo run is rooted in the identification of a key vulnerability which underpins the intermediation arrangement with which repos are associated: namely, the mismatch between the collateral-giver's short-term liabilities (ie its obligation to repay the cash borrowed at short notice) and its longer-term (and sometimes illiquid) assets (which may be

[60] See, eg, FSB, *Securities Lending and Repos: Market Overview and Financial Stability Issues Interim Report of the FSB Workstream on Securities Lending and Repos* (27th April 2012).
[61] See sources cited, *supra* n. 40; however, see, sources cited, *supra* n. 42.
[62] It is estimated that around 80% of collateral in the European repo market is government securities: ICMA http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/short-term-markets/Repo-Markets/frequently-asked-questions-on-repo/34-was-a-run-on-repo-the-cause-of-the-financial-crisis-in-2007/.
[63] See sources cited, *supra* n. 40.

difficult to sell for cash, or which are likely to be worth significantly less when sold *en masse*). Thus, in much the same way that banks 'borrow short and lend long', leaving them vulnerable in the event of a run on their deposits, any threat to the collateral backing the expansion in credit volume created by the repo, or, indeed any threat to the solvency of either counterparty, can help to generate—and, through interconnecting chains of complex and potentially opaque transactions, augment and subsequently transmit—systemic risk.[64] Significantly, in a series of influential articles, Gorton and Metrick contend that, during the GFC, swinging repo haircuts on sub-prime assets gave rise to a form of contagion that resembled a traditional bank run.[65] In their view, haircut increases are akin to the depositor withdrawals in a bank run scenario, and, as the GFC revealed, have the capacity to set in motion a form of forced deleveraging which further amplifies this trend.[66]

The two (related) transmission channels for a repo run are: (i) a contraction in asset values (due to collateral dumping); and (ii) fears surrounding counterparty default.

3.1 A contraction in asset/collateral values

Shocks which adversely affect the value of repo collateral can cause collateral-takers/lenders to issue margin calls on existing repos, or to increase haircuts on new repo agreements. As a result, leveraged firms are required to provide more assets to cover any 'calls', and sell more of their assets to generate liquidity. In all likelihood, asset sales of this nature would increase the risk of more widespread panic-driven 'fire-sales'. In such circumstances, assets would 'trade at prices far below value in best use, causing severe losses to sellers.'[67] Furthermore, increasing the supply of a collateralized asset at a critical time, and thus potentially aggravating price falls, could trigger a self-reinforcing downwards spiral, and set in motion yet further margin calls[68] and more extreme haircuts.[69] More generally, where other financial institutions hold similar asset classes, and are required to "mark them to market", additional downwards pressure is likely to be exerted on the market price of the assets in question. Any consequent unwillingness amongst

[64] See, ESMA, *supra* n. 44.
[65] Gorton and Metrick, *supra* n. 40, 426.
[66] *Ibid*., 429.
[67] Andrei Shleifer and Robert Vishny, *Fire Sales in Finance and Macroeconomics* 25 Journal of Economic Perspectives 29, 30 (2011).
[68] Martin Oehmke, *Liquidating Illiquid Collateral* 149 Journal of Economic Theory 183, 184 (2014).
[69] Gorton and Metrick, *supra* n. 40.

other market participants to absorb the risks associated with buying and retaining such assets would, in turn, reduce the availability of reliable prices for collateral valuation and serve to exacerbate price falls. In the face of concerns about the ongoing quality of certain types of collateral (and/or counterparty credit risk)—as happened at the onset of the GFC—cash-lenders would be incentivized to sever credit lines and hoard liquidity, with the result that borrowers would encounter difficulties in 'rolling over' their short-term borrowing, notwithstanding a willingness to collateralize it. Starved of liquidity, the effect in the shadow banking sector would resemble a 'run' in the traditional banking sector—but without the 'back stop' of official liquidity support from a central bank.

These problems are compounded where the assets subject to higher haircuts or additional margin calls are relatively illiquid or hard-to-value. According to Valukas, '[i]lliquid collateral requires longer time periods for sale at more uncertain prices, with time periods and prices dependent on the type of collateral, the amount of collateral to sell and [the] prevailing market conditions'.[70] Since illiquid instruments are infrequently traded and have no public screen-price, the fact of selling such instruments is almost certain to adversely affect their price. In potentially febrile markets, this would further accentuate ongoing uncertainty with regard to asset prices. Furthermore, leverage—which is a traditional hallmark of repo markets—would have the capacity to amplify such problems, by making it even more difficult for collateral-givers/borrowers to fund their positions and roll-over their debt.

Even where the collateralized assets backing a repo are widely regarded as being of high quality, shock events can still adversely affect asset prices and reduce the value of the posted collateral. This is because, unlike assets traded in many other markets, the value of a financial instrument is difficult to determine and depends, *inter alia*, upon its expected *future* value.[71] In determining where and how much to invest, investors may be influenced by factors that are unrelated to the future value of an asset. An example of such 'noise trading' occurs where investors, buoyed by a wave of market sentiment, continue to buy shares even after the market has experienced sustained price rises and has over-shot its equilibrium price,[72] or continue to sell

[70] Cited in Oehmke, *supra* n. 68, 184.
[71] Andrew Crockett, "Strengthening Financial Stability" in Philip Booth and David Currie (eds) *The Regulation of Financial Markets* (London: Institute of Economic Affairs, 2003) 49; and Kern Alexander, Rahule Dhumale, and John Eatwell, *Global Governance of Financial Systems* (New York: OUP, 2006) 253.
[72] For example, in relation to dot-com stock.

unaware that the bottom of the market has already been reached. Furthermore, the means by which equilibrium prices are maintained in the financial sector operates in a way that is significantly different from other sectors of the economy.[73] Somewhat presciently, as Crockett explained, as long ago as 2003:[74]

> [i]n the case of credit … an expansion in supply can, for a time, strengthen economic activity and boost asset prices—and, by improving the balance sheet position of both borrowers and lenders, it can sustain further increases in the supply of credit. Excess capacity and risk can build up unnoticed …. These problems are exacerbated by the fact that the leverage in financial intermediation can give rise to fragile balance sheets structures. The sudden and sometimes indiscriminate retrenchment of suppliers of funds can cause institutions and markets to be starved of liquidity, intensifying price declines and impairing the functioning of markets.

In many respects, during the GFC, repo markets exhibited the tendencies Crockett identified.

3.2. Counterparty default

Similar problems also arise where doubts surface with regard to the actual credit-worthiness of a collateral-giver/borrower counterparty (and its ability to conclude the repo). In such circumstances, collateral-takers/lenders are likely to be tempted to 'rush to the exits' to liquidate the collateral that has been 'posted' in advance of other lenders motivated to react in the same way.[75] As with cash-borrowers selling assets to generate liquidity, a glut of such collateral would depress prices further and, in all likelihood, exert self-reinforcing downwards pressure on asset prices. Again, where the collateral held by lenders is illiquid/or hard-to-value—or where a leveraged counterparty defaults 'while holding positions that are large relative to the markets in which they have invested'—lenders seeking to offload such assets are more likely to hasten price declines by virtue of their attempts to sell.[76] In turn, this increases the prospect of cash-lending counterparties—some of which may be systemically important entities in their own right, or linked to systemically important institutions—sustaining heavy losses.[77] While, ideally, collateral-takers/lenders would prefer to unwind their positions slowly over time, in practice this

[73] Crockett, *supra*, n. 71, 50.
[74] *Ibid*.
[75] Oehmke, *supra*, n. 68, 197.
[76] Ben S Bernanke, "Hedge Funds and Systemic Risk" (Speech at the Federal Reserve Bank of Atlanta's 2006 Financial Markets Conference, Sea Island, Georgia May 16, 2006) (www.federalreserve.gov/newsevents/speech/bernanke20060516a.htm).
[77] *Ibid*.

is likely to prove extremely difficult for two main reasons: first, balance sheet constraints in relation to, for example, capital, equity, or leverage, will limit the ability of lending counterparties to determine the speed at which positions are unwound;[78] and, secondly, competition among holders of illiquid collateral is likely to incentivize such lenders to sell the illiquid assets quickly, in order to avoid lower asset recovery prices, as competitors seek to liquidate assets in advance of 'crowded trades', where multiple sellers rush to the exit at the same time.[79]

All of the market adjustments outlined above, both to collateral and to accommodate increased counterparty risk, are likely to be motivated by factors which seem individually rational to the parties directly affected. Nevertheless, there is a clear risk that, at a more general level, such individually rational attempts at self-preservation will provoke a form of collective folly which serves merely to exacerbate the original problem. The result of this disjuncture between private and public interests would be to render the entire shadow banking network vulnerable to shocks. That is to say, while losses would initially be borne by the defaulting entity (and any of its adversely affected counterparties), in all likelihood these losses would not lie where they fell, but, via contagious runs, would spill-over—either directly or indirectly—to other interconnected entities within the shadow banking system, and, potentially, also to the traditional banking sector.

4. Assessing the regulatory options

In addressing the aforementioned concerns about the systemic effects of repo runs, regulators have either already utilized, or have available to them, a range of regulatory tools. Amongst the most important of these options, all of which are discussed below, are: (i) measures designed to increase transparency, with the aim of improving regulatory information-gathering and market discipline more generally; (ii) infrastructure improvements through the use of central counterparties (CCPs); (iii) improvements in collateral management associated with minimum initial margin/haircuts; and (iv) revamped bankruptcy/insolvency law arrangements involving the

[78] *Ibid*., 188.
[79] *Ibid*., 185.

removal/displacement of so-called 'safe-harbours' and the potential use of 'repo resolution authorities'. The purpose of discussing these measures is not to evaluate them vis-à-vis one another, or, to suggest, individually and/or collectively, that they are without merit. Rather, by focusing on weaknesses associated with the reform measures adopted or proposed, the aim is to shore up my claim that these reforms are emblematic of a type of post-crisis regulatory over-confidence which imbues regulators with a misplaced belief in their capacity to construct regulatory regimes which can contain systemic risks. This is particularly the case in view of the fact that policy-makers and regulators are today faced with an increasingly complex and inter-dependent financial system which, in its uncertain and unknowable frontiers of future systemic risk, outstrips their ability to regulate it in any meaningful way – especially when correlated failures occur.

What is more, the threat of a repo run remains notwithstanding the fact that recent regulatory reforms directed at bolstering bank capital,[80] and the use by monetary authorities of unconventional central bank monetary policies, have had the indirect effect of reducing excessive use of repo and of shrinking the supply of collateral.[81] The shortage of safe debt that the above developments have engendered is liable to result in the creation of new forms of short-term debt which are backed by supposedly 'safe' private (inside) collateral.[82] As confidence returns to financial markets, repo cash-lenders are liable to become more sanguine about their attitude towards such collateral, and, buoyed along by this upturn in market sentiment, may incline towards less rigour in their decision-making and increased collateral re-use than is in fact socially optimal. During times of market uncertainly, these private assets could lose their perceived safety in much the same way as value drained away from the privately created (inside) collateral associated with asset-backed securities (ABS) and mortgaged-securities (MBS) during the financial crisis. As a result, developments that have been characterized as significantly limiting the scope for a future repo run, could inadvertently result in increased repo market fragility. From this perspective, the prospect of a repo run remains a pressing regulatory issue –

[80] The Basel Committee on Banking Supervision has developed (i) a regulatory minimum leverage ratio (LR) designed to address the build-up of excessive leverage; (ii) a net stable funding ratio (NSFR), introducing a stable funding requirement for short-dated securities financing transactions; and (ii) a liquidity coverage ratio (LCR) designed to help banks weather short-term liquidity problems.
[81] For a discussion of the way in which banking reforms and unconventional monetary policies have indirectly impacted on repo, see, Cullen, *supra* n.45.
[82] See, *supra* n.46 and sources cited therein.

particularly where a sudden shock results in market wide retrenchment involving an inevitable scramble to unwind correlated positions.

4.1. Transparency as a means of improving regulatory information-gathering and market discipline

Rational decision-making by both regulators and market counterparties is hindered where markets lack transparency. Securities financing transactions (SFTs) are widely recognized as being complex, interconnected, and opaque.[83] Since European regulators have been in the vanguard of efforts to improve market transparency in relation to SFTs—principally by way of the Securities Financing Transactions Regulation (SFTR)—this section focuses on the new measures within that jurisdiction.[84] The SFTR, most of which came into effect on 12 January 2016,[85] seeks to address problems associated with a lack of transparency in SFTs in three key ways. First, it requires SFTs (including details on the composition of collateral and haircuts) to be reported to EU-recognized trade repositories so as to enable regulators to monitor the build-up of systemic risk in the financial system and, if necessary, to 'take better-targeted and timelier actions'.[86] Secondly, it provides for the ongoing disclosure of information by fund managers to investors whose assets are employed in any relevant SFTs. Finally, it mandates the disclosure of information to, and the need for the prior consent of, relevant counterparties with regard to the re-hypothecation (or re-use) of collateral in SFTs.[87]

As well as helping regulators to identify and assess, *ex ante*, the build-up of potential risks, improvements in market transparency is also likely to lead to improvements in market discipline. The availability of better-quality information is, for example, likely to enable cash-lending counterparties to engage in better counterparty risk control by, inter alia, limiting agreements to entities with good credit ratings, calculating and monitoring credit exposures,

[83] See, eg, FSB, *Securities Lending and Repos*, *supra* n. 60, para 5.1.
[84] Regulation (EU) 2015/2365 of The European Parliament and of The Council of 25 Nov. 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012.
[85] One exception is the implementation of a new reporting obligation which is to be phased in according to counterparty type.
[86] European Commission, *Fact Sheet, Regulation on transparency of securities financing transactions and of reuse: Frequently Asked Questions* (Brussels, 29 Oct. 2015).
[87] In essence, the SFTR enshrines in law a number of earlier FSB recommendations.

setting and adhering to risk limits.[88] Well-managed market actors are therefore likely to be rewarded with more business, whereas those that are poorly managed are liable to be penalized.[89] In this way, the interplay of market forces is said to eliminate—or at least reduce—the type of suboptimal behaviour that can give rise to systemic risk.[90]

Yet, while reforms to improve transparency in SFTs may be regarded as an improvement on the *status quo ante*, they are unlikely to address the scale of the risks posed by such transactions.[91] From the perspective of regulators, it is unlikely that the information provided to trade repositories will always be of sufficient granularity to enable the relevant authorities to make rational decisions in responding to events which generate systemic risk. In any case, even where this information is of sufficient quality, there is likely to be some element of time-lag in enabling regulators to acquire the level of knowledge necessary to undertake effective regulatory intervention. Furthermore, full-disclosure is not always optimal, since at some point the costs associated with increased disclosure will begin to outweigh the benefits.[92] Knowing where this balance lies will be difficult to determine. Inadequate disclosure will lead to the build-up of risk, whereas excessive disclosure will impose undue costs on market participants.

From the perspective of market discipline, although the provision of better quality information to markets and market participants is likely to result in risks being more accurately priced, the effectiveness of market controls is predicated on the existence of standard neo-classical assumptions associated with economically rational motivation, competitive market conditions (including, but not limited to, informed decision-making, and the absence of transaction costs).[93] To the extent that these assumptions do not hold in practice, acute market failures are sure to remain.[94] For example, cash-lending counterparties, such as prime brokers, are likely—notwithstanding improvements to market transparency—to continue to find it

[88] See, ICMA: '15. Is Repo Riskless?' (http://www.icmagroup.org/index.php/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/frequently-asked-questions-on-repo/15-is-repo-riskless/).
[89] Hossein Nabilou and Alessio M Pacces, *The Hedge Fund Regulation Dilemma: Direct vs Indirect Regulation* 6 William & Mary Business Law Review 183, 206 (2015).
[90] '[S]ystemic risk . . . is by definition an externality that internal procedures do not encompass and is not accounted for in the marketplace.' Alexander *et al*, *supra* n. 71, 260.
[91] See also Steven L Schwarcz, *Regulating Shadow Banking* 31 Review of Banking and Financial Law 619, fn. 103 (2011-2012).
[92] Comotto, *supra* n. 38: 'the extent of disclosure needs to be carefully considered, so that the regulatory value of the information gathered justifies the cost of reporting cost.' (para 1.17).
[93] See John Parkinson, *Corporate Power and Responsibility* (Oxford: OUP, 1993) 132.
[94] FSB, *supra* n. 60.

difficult to assess the trading strategies of borrowing counterparties and to value certain types of collateral, especially in relation to hard-to-value illiquid instruments. These difficulties exist not only in relation to calculating initial and variation margins, but also in relation to assessing wider counterparty risk.

Furthermore, insofar as a borrowing counterparty's business becomes an ever-increasing source of revenue for cash- lenders, there will exist an incentive—at least in the short-run—in taking a more relaxed approach to assessing counterparty risk. In other words, any expectation that improved disclosure will significantly help to resolve weaknesses in market discipline in SFTs, is likely to prove misplaced if these entities are the primary beneficiaries of a borrower's high levels of leverage and potentially overly risky—albeit profitable—trading strategies.

Finally, to the extent that a cash-borrower receives repo-financing from a number of different counterparties, collective action problems are almost certain to arise (especially where individual counterparty exposure is relatively small). In such circumstances, lenders will prefer that others (and not themselves) bear the full cost of any due diligence and risk assessment of a borrower's risk profile. That is to say, counterparties have an incentive to 'free-ride' on the due diligence and risk monitoring efforts of others. The end result is, therefore, a *general* tendency for firms to economize on counterparty risk assessment and an overall erosion of the disciplinary effects of private monitoring notwithstanding improved transparency.

It follows, therefore, that although measures which seek to promote market transparency might produce some benefits in terms of aiding regulators to identify and assess *ex ante* risks and to improve market discipline amongst market-players, these measures are liable to fall short of ensuring the optimal internalization of the full risks associated with repo activity. The continuing presence of serious informational problems of the type discussed above, as well as failure of other standard neo-classical assumptions to hold in practice, makes it unlikely that the existence of market constraints will operate in such a way as to ensure that the private interests of market players are fully, or even adequately, aligned with the public good. This is not an argument against measures which seek to promote market transparency, but merely an acknowledgement that such measures are likely to be of limited value and that, accordingly, regulators need to be much less sanguine about the effectiveness of these tools in constraining the build-up of risk.

4.2. Improving market infrastructure: the use of central counterparties ("CCPs")

A potential way of addressing some of the weaknesses associated with reliance on counterparty risk controls in repo markets is for regulators to require that repo transactions are cleared through a central counterparty ('"CCP', or 'clearinghouse')[95]—much like the new framework applicable to derivatives trades.[96] Clearing trades via CCPs is said to create a more transparent and less complex set of exposures than would otherwise be the case with bilateral, over-the-counter (OTC) non-cleared trades. In essence, CCPs seek to contain and dissipate counterparty credit-risk and, in doing so, to reduce overall risk in the markets in which they operate.[97] Thus a CCP effectively stands as a 'firewall' between the defaulting firm and the contagion-like loss which threatens the wider financial system. In the context of repos, CCPs seek to do this by interposing themselves between the buyer and seller of a repo transaction, both of which are CCP members, so as to guarantee the obligations of each counterparty to the contract. Accordingly, if one counterparty becomes insolvent, the financial might of the CCP is deployed to ensure that the insolvent's obligations are fulfilled and contagion averted.

The use of CCPs to clear repo trades is said to offer a number of important advantages.[98] First, as we have already seen, since many SFTs are widely regarded as opaque, mandating that they are cleared via a CCP would help to standardize trades and improve information flows.[99] As spreads narrow and pricing becomes more accurate, repo-trading would become less expensive—thus potentially fostering more mutually beneficial trades.[100]

Secondly, by centralizing what would otherwise be dispersed, bilateral, OTC trading, mandating that repo-trades are cleared through a CCP would enable regulators to acquire an

[95] See, eg, Paolo Saguato, 'The Liquidity Dilemma and the Repo Market: A Two-Step Policy Option to Address the Regulatory Void' 22 Stanford Journal of Law, Business & Finance 85 (2017). A CCP is a special type of clearinghouse. According to Regulation (EU) 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories—the so-called European Market Infrastructure Regulation (EMIR)—a CCP is defined as: "a legal person that interposes itself between the counterparties to the contracts traded on one or more financial markets, becoming the buyer to every seller and the seller to every buyer." (Art 2(1)). In the academic literature, however, the terms 'clearinghouse' (or 'clearing house') and 'CCP' are often used inter-changeably.
[96] The G20 Leaders agreed at the 2009 Pittsburgh Summit that all standardized derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through CCPs.
[97] Amandeep Rehlon and Dan Nixon, *Central Counterparties: What are they, Why do they Matter and How Does the Bank Supervise Them?* Q 2, June 13 Bank of England Quarterly Bulletin 1, 2 (2013).
[98] See generally, Mark J Roe, *Clearinghouse Overconfidence* 101 California Law Review, 1,641, 1,658-1,662 (2013).
[99] *Ibid*., 1,657.
[100] *Ibid*., 1,658.

overall impression of risk-taking within the relevant market and, if necessary, to implement a coordinated strategy which promptly addresses any emerging problems.

Thirdly, it is claimed that CCPs provide an arena in which counterparty-risk can be more accurately assessed and collateral more accurately calibrated so as to address those risks. In order to determine how much collateral is needed from a counterparty in a bilateral trade, a trader must assess both the market-value of the agreement and the counterparty's credit quality.[101] A single centralized player, such as a CCP, is said to be better-placed than individual counterparties to do this. CCPs are better resourced than individual firms and, by virtue of the specialized role they perform, are said to be both better equipped and have greater incentives to undertake accurate risk assessments than individual firms. From a CCP's privileged vantage-point, it is able to survey the entire market and neutralize counterparty-risk by calculating the correct amount of 'initial margin' required from each participating counterparty. This collateral operates as a 'first line of defence', since, if needed, it can be liquidated to cover any losses as a result of a member-firm's inability to perform its contractual obligations.[102] In addition, since a CCP engages in ongoing risk assessments, it can issue margin calls to reflect any deterioration in the value of the collateral posted, and in this way combat the risk associated with having to liquidate assets. Thus, by demanding sufficient amounts of high-quality collateral from each counterparty at the outset, and by monitoring the value of that collateral and adjusting the amount needed on a daily basis, CCPs perform an important role *ex ante* in helping to prevent defaults from occurring, while at the same time remaining well-placed, *ex post*, to assume the contractual obligations of any member-firm that does default.

The fourth claimed benefit of clearing repo transactions via a CCP is that the CCP serves to 'insure, mutualize, and thereby dissipate the risk' that a single firm's failure will adversely affect the viability of other interconnected financial firms.[103] That is to say, by insuring and mutualizing—ie sharing or spreading—risk, CCPs help to stave-off wider systemic collapse. A CCP does this by absorbing counterparty defaults, thereby denying transmission of the adverse effects of defaults to the wider financial system and, in turn, the economy.

[101] *Ibid.*
[102] Rehlon and Nixon, *supra* n. 97, 5.
[103] *Ibid.*

CCPs have the capacity to absorb risk in this way because they may call upon a range of financial resources in the event of a counterparty's default—collectively known as a 'default-waterfall'.[104] Significantly, the order in which these resources are called upon 'helps to create appropriate incentives for all parties (members and CCPs) to manage the risks they [incur].'[105] Accordingly, if the CCP is unable to 'auction off' the defaulter's positions among surviving CCP members, it will have resort to the defaulting member's initial margin and, if necessary, the defaulting member's contribution to the CCP's default fund—into which all members must pay upon joining the scheme. In the event that the defaulting-firm's initial margin and default-fund contribution is insufficient to cover the relevant exposure, a CCP typically contributes some of its own equity resources towards absorbing the loss.[106] The rationale for this so-called 'skin in the game' is to incentivize the CCP 'to ensure that losses are … limited to the resources provided by the defaulting member rather than being passed on to other members."[107] As such, it is only if the CCP's own contribution is insufficient that the losses are mutualized—shared—amongst all the other (non-defaulting) members. Finally, if 'these loss-absorbing resources (which up to this point are all pre-funded) are exhausted … CCPs may call on surviving members to contribute a further amount, usually up to a pre-determined limit.'[108]

Mutualization benefits and the dissipation of risk are also strongly associated with the fact that participating CCP members, and, indeed, the wider financial system, are bolstered by the reduction in counterparty risk associated with the multilateral netting services performed by CCPs. These services simplify any outstanding exposures between participating market-players, by 'offsetting an amount due from a member on one transaction against an amount owed to that member on another, to reach a single, smaller net exposure'.[109] In performing this role, the CCP, via a process of 'novation', inserts itself into every contract between participating members, and thereby becomes the 'buyer to every seller and the seller to every buyer'. The operation and effect of netting in this context is explained by the Squam Lake Working Group:[110]

---

[104] *Ibid*., 4.
[105] *Ibid*., 5.
[106] *Ibid*.
[107] *Ibid*.
[108] 'In the absence of a mechanism to allocate any further losses among its members, the CCP's remaining equity then becomes the last resource with which to absorb losses …. If losses exceed this remaining equity, the CCP would become insolvent': *Ibid*.
[109] *Ibid*., 4.
[110] Squam Lake Working Group on Financial Regulation, *Credit Default Swaps, Clearinghouses, and Exchanges* 3 (Council on Foreign Relations, Center for Geoeconomic Studies, Working Paper, 2009) (available at

> Suppose … that Dealer A has an exposure … to Dealer B of $1 billion . . . . That is, if Dealer B fails, then A would lose $1 billion. Likewise, B has an exposure to Dealer C of $1 billion, and C has an exposure to A of $1 billion. Without a clearinghouse, default by A, B, or C leads to a loss of $1 billion [by one of the other two]. With clearing, however, the positive and negative exposures of each counterparty cancel, and each poses no risk to anyone, including the clearinghouse.

In the event that the exposures do not cancel one another out neatly, as in the above example, netting can nevertheless produce a single net exposure.[111] The clearing of transactions and netting of exposures, especially in the event of a member-firm's default, to arrive at a single sum, in turn helps to alleviate liquidity pressures on participating members in times of acute market stress.

Yet, for all the claimed advantages of CCPs, concerns have nevertheless been expressed about their increasing use by regulatory authorities.[112] Roe, for example, bemoans the current regulatory 'infatuation' with this form of market infrastructure, arguing that regulatory efforts to promote CCPs are 'misguided',[113] and that they are 'weaker bulwarks against financial contagion, financial panic, and systemic risk than is commonly thought'.[114] Specifically, Roe claims that the effectiveness of CCPs in mitigating the risk that the failure of one financial firm will cause other firms to fail is overstated.[115] At the heart of Roe's critique of CCPs is his inversion of their most significant claimed advantage: that is, the 'mutualization principle', whereby risks are shared or spread within the CCP network so as to help stave-off wider systemic collapse. In this respect, although Roe accepts that mutualisation can in some instances help to neutralize risk, in his view CCPs do not always eliminate the targeted risk from the

---

http://www.cfr.org/financial-crises/credit-default-swaps-clearinghouses-exchanges/p19756) cited in Roe, *supra* n. 98, fn. 68.

[111] However, since CCPs tend to specialize in particular financial instruments, this reduces the scope for netting across products, which is possible in the context of bilateral trades. ICMA: 'Q 27. What does a CCP do? What are the pros and cons?' (https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/27-what-does-a-ccp-do-what-are-the-pros-and-cons/).

[112] See generally, Roe, *supra* n. 98; Craig Pirrong, *The Clearinghouse Cure* (Winter) Regulation 44 (2008–2009); and Julia L Allen, *Derivatives Clearinghouses and Systemic Risk: A Bankruptcy and Dodd-Frank Analysis* 64 Stan Law Rev 1,079, (2012).

[113] Roe, *ibid*., 1,646.

[114] *Ibid*., 1,641.

[115] *Ibid*., 1,699.

financial system.[116] Instead, CCPs merely serve to transfer that risk to other institutions—typically those institutions outside of the CCP member-firm network—some of which may be poorly placed to bear it.[117] In other words, although when a CCP member-firm posts high-quality collateral for a trade with another member-firm, this promotes risk-spreading, it also exposes non-member firms with which it trades to more risk. This is so because the collateral posted is no longer available to honour obligations that may be subsequently incurred by the member-firm to those outside the CCP network. Accordingly, unless institutions outside the CCP network are able to adjust for this risk by, for example, securing new credit-lines or sources of collateral, the risk of contagion is merely directed elsewhere within the financial system rather than eliminated. To the extent that these 'outside' institutions are themselves systemically important, or too-big-to-fail, CCPs can act in ways which funnel contagion to other vulnerable, yet vital, institutions.[118]

Furthermore, Roe claims that although CCPs may be able to absorb and diversify away so-called idiosyncratic risk,[119] risk-spreading (ie diversification) cannot successfully combat market-wide systemic risk when counterparty failures become correlated, as occurred during the GFC.[120] Even where a CCP has previously rated collateral as AAA, recent events reveal that this is no guarantee that the value of such formerly highly-rated collateral will not deteriorate sharply. Put another way, there is nothing to suggest that CCPs will prove to be any more accurate than Credit Rating Agencies (CRAs) at rating collateral quality.[121] In so far as any system-wide shock adversely affects the value of widely held forms of collateral and provokes a wave of deleveraging by cash-starved firms, collateral sales by CCPs in response to member-firm defaults are liable to exacerbate downwards pressure on prices. In such circumstances, CCPs are more likely to be part of the problem rather than part of the solution, deepening the

[116] *Ibid*., 1,641.
[117] *Ibid*., 1,646.
[118] *Ibid*., 1,641.
[119] Since the default risk is mutualized, and thus spread amongst all participating members, it can be argued that CCPs actually have fewer, rather than more, incentives, to monitor the margins and/or quality of collateral used in repo transactions than would be the case in a bilateral repo. CCP counterpary risk assessments could also be compromised to the extent that a CCP's private interests and public obligations are not sufficiently aligned. This could occur in situations where the commercial success of the CCP is reliant on a member-firm (or sub set of firms) whose interests may—at least in the short-term—conflict with the public good. *Ibid*., 1,695 and sources cited therein.
[120] *Ibid*., 1,677.
[121] Pirrong, *supra* n.112, 48 and 51.

adverse impact of fire-sales and adding to the ensuing panic.[122] Consequently, from a regulatory perspective, at the very stage when the putative protection offered by CCPs are deemed most vital, by seeking to protect themselves from loss, they are likely to expose their Achilles' heel by acting as a conductor for the transmission of risks.

What is more, in view of the fact that CCPs stand at the nexus of the market in which they offer clearing services, CCPs can, according to Roe, 'easily gather, funnel, and expand systemic risk by pulling previously decentralized, discrete, and systemically containable risks into a single platform.'[123] Thus, by acting as a magnet for risk before seeking to share it around, CCPs can themselves become 'too-big-to-fail' institutions. This simply moves the problem of bailout from one systemically critical arena (a vital financial institution) to another (a pivotal CCP), thereby augmenting problems associated with moral hazard in modern financial markets.

In sum, while CCPs are likely to function as efficient venues for repo transactions in ordinary times, at moments of acute market stress they are unlikely to provide the kind of 'backstop' that has, to date, animated policy-makers and regulators to mandate their services in the context of derivatives trading. This is not to say that mandating the migration of standardized repo transactions to CCPs represents an obviously wrong policy choice.[124] Rather, it is to suggest that despite the *general* effectiveness of CCPs in containing and dissipating risk in good or moderately turbulent times, they are in fact liable to exacerbate problems at times of acute market stress – which is exactly when regulators will have most need of them. In other words, in much the same way that the market-based finance associated with ABS and MBS helped to neutralize systemic risk in good or moderately turbulent times pre-crisis, but amplified it in times of acute market stress, so too are CCPs liable to exhibiting similar tendencies. To the extent that a form of hubris leads regulators to discount this weakness, there is a danger that the risks associated with repo activity will become under-priced that and that interconnected lines of transmission will become yet more pronounced.

---

[122] 'Greater use of CCPs means greater collective reliance on a limited range of risk management methodologies, which may synchronise reactions to news (eg changes in haircuts or collateral eligibility) and generate pro-cyclical shocks to the financial system. [Aggressive] haircutting by CCPs arguably had such an effect on Greece, Ireland, Italy, Portugal and Spain in 2011.' ICMA, *supra* n. 111.

[123] Roe, *supra*, n. 98, 1,646.

[124] As part of its ongoing working on repo transactions and securities lending, the FSB has recommended that authorities should 'evaluate the costs and benefits of central clearing in their securities lending and repo markets'. (Recommendation 12): FSB, *Strengthening Oversight and Regulation of Shadow Banking: An Integrated Overview of Policy Recommendations* (Consultative Document, 18 Nov. 2012).

4.3.Minimum standards for the methodologies used to calculate haircuts and minimum haircut floors

Notwithstanding a growing regulatory preference for the use of CCPs, many repo trades will either not be centrally cleared, or will not be suitable for central-clearing. Thus, such repo trades *may*—because of the market failures discussed earlier—be insufficiently collateralized.[125] This is problematic inasmuch as the practice of setting haircuts is procyclical.[126] That is to say, market margining practices results in the amplification of a trend—by increasing the supply of credit during economic booms (leading to the build-up of excessive leverage), and constricting it during downturns, at a time when access to funds is most acute. Proponents of this view contend that such procyclicality was evident both immediately before and during the GFC.

One initiative that is designed to 'limit the build-up of excessive leverage outside the banking system and reduce the procyclicality of that leverage',[127] is the use of minimum standards for the methodologies used to calculate such haircuts, and the use of minimum numerical haircut floors for non-centrally cleared SFTs.[128] The origins of these reforms lie in exploratory work undertaken by the Bank for International Settlements (BIS),[129] and, more recently taken forward by the FSB.[130] This has resulted in the creation, at the international level, of a new regulatory framework for haircuts comprising: first, 'the use of qualitative standards to be incorporated into existing or new regulatory standards for methodologies used by all market participants to calculate haircuts on collateral received';[131] and, secondly, '[a] framework of numerical haircut floors, … apply[ing] to non-centrally cleared securities financing transactions

[125] See, *supra*, n. 91 and accompanying text**.**
[126] Procyclicality refers to the amplification of an existing trend. BIS, Committee on the Global Financial System (CGFS), *The role of margin requirements and haircuts in procyclicality* (Paper No. 36, March 2010) 8.
[127] FSB, *Strengthening Oversight and Regulation of Shadow Banking: Regulatory Framework for Haircuts on Non-centrally Cleared Securities Financing Transactions* (Oct. 2014) at para 1 (http://www.fsb.org/wp-content/uploads/r_141013a.pdf).
[128] See FSB, *Consultative Document on Strengthening Oversight and Regulation of Shadow Banking: A Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos* (WS5) (Recommendations 6 (on methodologies) and 7 (on minimum haircut floors)).
[129] BIS, CGFS, *supra* n. 126, vii.
[130] FSB 2014, *supra* n. 127, which specified the regulatory framework for haircuts on non-centrally cleared securities financing transactions (SFTs), and introduced a framework for haircut floors for non-centrally cleared SFTs (largely following the earlier proposal FSB in Aug. 2013).
[131] FSB, *Transforming Shadow Banking into Resilient Market-based Finance Regulatory framework for haircuts on non-centrally cleared securities financing transactions* (12 Nov. 2015) 4.

(SFTs) in which financing against collateral other than government securities is provided to non-banks.'[132]

With regard to the use of qualitative standards for the methodologies firms use to calculate haircuts, regulatory authorities have been tasked with ensuring that haircuts are based 'on the market risks of the assets used as collateral and [are] calibrated at a high confidence level, using a long historical time period that includes at least one stress period'.[133] In this respect, regulatory authorities are able to minimize the extent to which methodologies used are procyclical, and are to keep such methodologies under review. This aims to improve the quality and consistency of the setting of haircuts across the entire spectrum of securities financing markets. By seeking to ensure that haircut standards will be less likely to deteriorate during benign conditions, the FSB framework is directed at limiting the risk that haircuts will need to be increased during market downturns, and, thus, at mitigating the risk of more widespread and potentially destabilising de-leveraging. The introduction of qualitative standards is, therefore, expected to promote the adoption of haircuts that cover any potential deterioration in collateral values in the event that the collateral posted needs to be liquidated under volatile conditions.

By contrast, minimum numerical floors apply only to non-centrally cleared SFTs in which financing against collateral other than government securities is provided to non-banks.[134] In this respect, the new framework as it relates to numerical floors is much narrower than that which relates to the use of qualitative standards, since the latter applies to *all* SFTs, whereas the former applies only to a subset of such transactions. Where the new framework applies, counterparties must conduct their own assessment as to the appropriate level of haircuts, albeit that they are unable to set haircuts below the level prescribed.

Though contentious, the above reforms are widely thought to have two key advantages. First, it is claimed that mandatory haircut floors will help to provide a high minimum amount of financial protection for the collateral-taker/lender in the event that collateral-giver/borrower defaults, thus cushioning the adverse impact of the default. Secondly, minimum floors are believed to act in ways that are likely to constrain the build-up of leverage—and thus

[132] *Ibid*. Originally this covered only banks to non-banks, but, following additional consultation, it has been extended to non-bank to non-bank transactions. *Ibid*., 2.
[133] *Ibid*., 4.
[134] Plans for the introduction of these proposals by national authorities are already afoot.

procyclicality—by requiring parties to post more collateral than they otherwise would if left to their own devices and, in doing so, ensure that suboptimal levels of repo-trading are discouraged.

However, these reforms have not met with universal approval. It has, for example, been argued that 'a one-size-fits-all [approach to mandatory minimum haircuts] risks distorting the [repo] market',[135] and that the 'terms of a repo are best set by market forces, responding to current market conditions and a multitude of other factors that regulations can never adequately capture.'[136] It has also been suggested that notwithstanding the fact that the FSB treats the issue of haircut methodologies and the issue of numerical haircut floors separately, the use of overly prescriptive methodologies are likely to serve to create a *de facto* minimum floor. If true, this is of significance, since haircut floors apply only to a subset of SFTs, whereas rules relating to haircut methodologies are set to apply to all SFTs. According to the Investment Company Institute (ICI) and ICI Global (admittedly, both leading industry lobby groups with a vested interest in maintaining the status quo), the current market haircut norms already serve to ensure that haircuts do not fluctuate during periods of market turbulence, whereas the FSB's new framework, by interfering with established market arrangements, is liable to 'increase the risk of credit disruptions.'[137]

More significantly, it has been argued that the FSB's new framework is based on a premise that is open to question, namely, the assumption that there is a link between the size of haircuts for repos and the amount of leverage and pro-cyclicality in the financial system (and, moreover, that the adverse effects of both were evident during the GFC). Although Gorton and Metrick found evidence of procyclical haircuts in bilateral US repo during the financial crisis,[138] Comotto contends that because their study focused solely on so-called "structured securities", the implications of their findings cannot readily be extrapolated to the US markets more widely, and *a fortiori* to European markets.[139] According to Comotto—at least in relation to high-quality collateral—the empirical evidence undermines 'the hypothesis that initial margins/haircuts were

[135] Richard Comotto, *Haircuts and Initial Margins in the Repo Market* (ICMA, Feb. 2012) para 1.8.
[136] Investment Company Institute and ICI Global's Joint Response *Re: Proposed Regulatory Framework for Haircuts on Non-Centrally Cleared Securities Financing Transactions* (Annex 2 of Aug. 29, 2013 Report on Strengthening Oversight and Regulation of Shadow Banking) (Nov. 27, 2013) (section 4) (hereinafter "Joint Response") (https://www.ici.org/pdf/27734.pdf).
[137] *Ibid.*
[138] See, *supra* n. 39.
[139] Comotto, *supra* n. 38, para 1.8.

the principal driver of deleveraging in the crisis'[140] Comotto further contends that if this is correct, then 'the idea of mandatory through-the-cycle initial margins/haircuts to obviate the need for dealers to raise initial margins/haircuts in a crisis is clearly redundant.' [141]

Finally, it has been claimed that the use of numerical haircut floors are likely to be ineffective in addressing the putative leverage problem they are designed to address. According to the ICI and ICI Global's Joint Response:[142]

> [L]ooking at repos … in a vacuum, any decrease in leverage that results from an increase in haircuts would be insignificant. For example, suppose a broker-dealer has $102 million of general collateral available for repo transactions. At a standard haircut of 2%, the broker-dealer could raise $100 million through repos using this collateral. If the haircut were increased to 4%, the broker-dealer could still raise $98.077 million. Thus, doubling the haircut on repos would result in less than a 2% reduction in the broker-dealer's leverage.

Since in reality firms may acquire credit through a variety of routes, any reduction in the amount of repo-trading which numerical haircuts cause will, in all likelihood, be 'offset by increases in other, cheaper forms of credit.'[143] Admittedly, the introduction of new balance sheet reforms for systemically important financial institutions (in the form of more stringent capital and liquidity requirements) will, inter alia, reduce their reliance on repo—and thus help to curtail the build-up of excessive leverage—nevertheless, minimum mandatory haircuts are perhaps best characterized as a rudimentary regulatory tool in mitigating the threat of a repo run.

Many of the above criticisms of reforms associated with haircuts clearly carry weight. Yet, perhaps more worryingly, reforms of the type at which these criticisms are directed, embody a commitment to bringing repo-trading more fully within the regulatory fold. And although the animating rationale for these reforms may be a laudable and understandable desire to address concerns about procyclicality and the need to suppress excessive repo activity, regulators are in danger of bringing an ever-expanding range of financial activity within their purview, much of which, it is suggested, they will be ill-equipped to deal with in the event of widespread market disruption.

---

[140] *Ibid*., para 6.8.
[141] *Ibid*.
[142] Joint Response, *supra* n. 136, Section 4.
[143] *Ibid*., Section 2.

4.4. Reform of bankruptcy/insolvency law and the potential use of repo resolution authorities (RRAs)

A final set of reform measures are associated with revamped bankruptcy/insolvency law arrangements involving the removal/displacement of so-called 'safe-harbours' and, more radically, the potential use of so-called repo resolution authorities (RRAs). Currently, under the bankruptcy/insolvency laws of a number of leading repo jurisdictions – most prominently the US – repo agreements (and certain other financial transactions) are exempt from the 'automatic stay' which ordinarily applies when a debtor defaults.[144] Accordingly, in the event that, say, the collateral giver becomes insolvent, the cash lender does not need to wait until the conclusion of bankruptcy/insolvency proceedings before enforcing their security. Instead, the collateral-taker/cash-lender is entitled to terminate the repo agreement, set-off any remaining mutual debts or other claims, and liquidate and collect any of the defaulter's collateral which they hold. The rationale for this special statutory—'safe-harbour'—treatment is rooted in the belief that by enabling repo counterparties to terminate contracts quickly, these counterparties can limit their exposure to the debtor's default, and thus stave off their own insolvency.[145] By affording legal certainty, the safe-harbour enables a collateral-taker/lender both to 'close-out' its positions with immediate effect so as to generate liquidity at the best available prices, and to re-hedge its positions with new counterparties.[146] The potential 'domino-effect', where the failure of one vital institution causes the failure of another, is therefore contained, and the risk that contagion will 'cascade through the interconnected financial sector' averted.[147]

By contrast, an application of the automatic stay would, it is thought, expose repo counterparties to a number of unique risks. In the event that repo-collateral was 'frozen' in general insolvency proceedings, the inability of the collateral-taker to close out the agreement

[144] According to Paech, "[t]his approach is remarkably homogeneous across developed markets": Philipp Paech, *The Value of Financial Market Insolvency Safe Harbours* 36 Oxford Journal of Legal Studies 855, 861 (footnote omitted) (2016).
[145] See, eg, "Exploring Chapter 11 Reform: Corporate and Financial Institution Insolvencies; Treatment of Derivatives", Hearing Before the H Subcomm on Regulatory Reform, Commercial and Antitrust Law of the H Comm of the Judiciary, 113th Cong 6 (2014) (statement of Seth Grosshandler) (available at http://goo.gl/QpTsgK).
[146] Edward R Morrison, Mark J Roe, and Christopher S Sontchi, *Rolling Back the Repo Safe Harbors* 69 The Business Lawyer 1,015, 1,024 (2014).
[147] Roe, *supra*, n. 98, at 1,652.

would make re-hedging difficult, since the underlying value of the collateral would be liable to fluctuate. Consequently, affected collateral-takers would be rendered more vulnerable to collapse, potentially triggering a wave of other counterparty defaults.[148] The application of the automatic stay could also potentially exacerbate liquidity problems within distressed financial markets. In particular, solvent, but illiquid, firms would find it hard to roll-over debt, or find new counterparties willing to extend them credit. Absent a safe-harbour, creditors would fear that any credit provided would be used to clear the firm's existing debt rather than serve to 'back' the new loan. The unwillingness of creditors to lend to counterparties in such circumstances could cause liquidity to drain away from the financial markets at the very time it is most needed.

The existence of a safe harbour is of acute significance where the repo collateral is pledged – which, as we have previously seen, is typically the case in the US. In such circumstances, although possession of the collateral passes to the other party (the cash-lender), ownership of the collateral is retained by the collateral-giver. Accordingly, were repo collateral to be pledged without the existence of a safe harbour, the cash-lender would be exposed to the vagaries of the automatic stay in the event that the cash-borrower entered into bankruptcy/insolvency proceedings. By contrast, in the UK (and Europe more general), since repo collateral typically involves an outright transfer of title which enables the collateral taker/cash-lender to assert its proprietary rights to the collateral, the automatic stay, and the need for statutory safe harbour protection, is of more limited significance.[149]

Interestingly, in the aftermath of the financial crisis, there has been growing support amongst a number of leading US scholars for a narrowing of the US repo safe-harbour arrangements. These commentators argue that the special treatment of repos tends to increase

[148] Although the Bankruptcy Code provides protections to secured creditors, the mechanisms are not timely enough and are too cumbersome to obtain to effectively protect counterparties under volatile Safe Harbored Contracts, especially on a large scale, such as during the failure of a systemically important financial institution

[149] According to Benjamin, the protections afforded by an outright transfer of title to collateral-takers have long been recognized in English law, citing: *Beckett v Lower Assets Co Ltd* (1891), *British Railway Traffic v Kahn* (1921), and *Chow Yoong Hong* (1961), and, more recently, in *Pearson v Lehman Brothers Finance SA* [2010] EWHC 2914 (Ch), AC [2011] EWCA Civ 1544 (RASCALS). Joanne Benjamin *Lessons of LBIE: Reuse and Rehypothecation* in Dennis Faber and Niels Vermunt (eds.), Bank Failure: Lessons from Lehman Brothers (Oxford: Oxford University Press, 2017) 171, fn.5. Bankruptcy style safe harbours are nevertheless a feature of the Financial Collateral Directive (FCD), Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements (OJ L 168/43) (Arts 4, 6, and 7). Furthermore, in implementing the Directive in the UK, the Financial Collateral Arrangements (No 2) Regulation, Art 12(1) provides that: 'A close-out netting provision shall … take effect in accordance with its terms notwithstanding that the collateral-provider or collateral-taker under the arrangement is subject to winding-up proceedings or reorganisation measures.'

rather than reduce systemic risk,[150] and that in so far as special protection continues, it should be limited only to repos that are 'backed' by high quality collateral (essentially government-backed securities), and be denied to repo transactions backed by collateral that is risky or hard-to-value collateral (such as mortgage-backed-securities). Other commentators have gone even further, arguing that in the event of the default of a repo agreement backed by risky or hard-to-value collateral, but which is nevertheless of high quality, collateral-takers would be obligated to sell this collateral to a "Repo Resolution Authority" (RRA). The RRA would arrange for creditors to receive an immediate pay-out at market prices minus pre-defined haircuts specified by asset class by the RRA.[151] Subsequently the RRA—which would be established in all jurisdictions with significant repo activity—would seek to liquidate the collateral over time so as to maximize its recovery value. The RRA would also have a right of 'claw-back' if the amount initially paid to the creditor proved overly optimistic. What is more, RRAs would levy an *ex ante* fee on repo lenders, and impose a set of eligibility criteria on them.

Antipathy towards the repo safe-harbour revolves around the adverse effects that the use of safe-harbours exert on financial markets.[152] It is, for example, argued that the safe-harbour encourages an excessive amount of short-term financing, which is thought to be inherently unstable.[153] All things being equal, in view of the fact that safe-harboured creditors are afforded better protection than non-safe-harboured creditors, this creates a market preference for the former type of funding over the latter.[154] To the extent that vital financial institutions become reliant on such financing, they are likely to exhibit greater fragility—thus augmenting the too-big-to-fail problem.[155] Instability in repo funding resides in the fact that repos are "run-prone"; that is to say, any threat to the solvency of a repo counterparty is liable to cause safe-harbour privileged collateral-takers to terminate their financial contracts with the defaulting counterparty, and, as a consequence of cross-default clauses in other agreements, to provoke safe-harbour privileged collateral-takers in unrelated trades to do likewise. However, although the effect of

[150] See, for example, Morrison *et al*, *supra* n.146; and Duffie, Darrel and David Skeel (No. 108) *A Dialogue on the Costs and Benefits of Automatic Stays for Derivatives and Repurchase Agreements*, Stanford University Working Paper (2012).
[151] See, Acharya, Viral and T. Sabri Öncü, *A Proposal for the Resolution of Systemically Important Assets and Liabilities: The Case of the Repo Market* (2012).
[152] Even proponents of safe-harbours recognize that they raise the spectre of privilege and special interest pleading: Mark D Sherrill, *In Defense of the Bankruptcy Code's Safe Harbors* 70 *The Business Lawyer* 1,007, 1,036 (2015).
[153] Morrison *et al*, *supra* n.146, 1,018.
[154] *Ibid*., 1,025, fn 37.
[155] *Ibid*., 1,027.

exercising these termination rights would be to channel assets from the defaulting firm to potentially vital safe-habour privileged firms (and, thus, to shore up the balance sheets of such institutions), the combined effect of the *en masse* liquidation of collateral at fire-sale prices would be likely to reduce its value and also to adversely affect the value of collateral more generally. The deterioration in collateral prices could, in turn, spread distress throughout the financial system, as firms scrambled to secure liquidity.[156]

In addition, it has been argued that the repo safe-harbour undermines creditors' incentives to monitor the credit quality of their counterparties, since unlike non-safe-harboured creditors, safe-harboured creditors know they can seize collateral and eliminate—or at least minimize—their exposure to the defaulting counterparty. In the years preceding the GFC, the presence of a safe-harbour arguably blunted creditors' incentives to monitor the credit quality of counterparties. As Roe points out, the capital structures of firms such as AIG, Bear Sterns, and Lehman Brothers would probably have looked stronger had repo and derivatives counterparties not been afforded safe-harbour status.[157] Furthermore, the existence of safe-habours can create perverse incentives for creditors to demand collateral irrespective of the impact that any margin-call might ultimately have on the solvency of its already wounded counterparty. In this respect, the safe-harbour can incentivize collateral takers to 'dismember institutions that [might otherwise] have been economically viable.'[158] Indeed, as Roe claims in the context of US developments, 'in 2008 the Bankruptcy Code's superpriorities may well have pushed derivatives and repo creditors of failing financial firms to rush to cash in their claims and upgrade their collateral, which other [non safe-harboured] creditors could not do.'[159]

Whether the 'disease' which safe-harbours aim to address (that is, contagion-based systemic risk) is worse than the 'cure' (that is, granting privileged status to certain financial creditors) is, as some commentators have noted, indeterminate, since the supposed cure is also associated with a number of attendant dangers which threaten to undermine its original

[156] The adverse impact of these "fire-sale externalities" is confirmed in recent empirical work: Fernando Duarte & Thomas M Eisenbach, *Fire-Sale Spillovers and Systemic Risk* (Fed Reserve Bank of New York Working Paper No. 645, 2014) cited in Morrison *et al*, *supra* n. 146, 1,030, fn. 48.
[157] Marc J Roe, *The Derivatives Market's Payment Priorities as Financial Crisis Accelerator* 63 Stan L Rev 539, 579 (2013).
[158] Jodie Kirshner, *The Bankruptcy Safe Harbor in Light of Government Bailouts: Reifying the Significance of Bankruptcy as a Backstop to Financial Risk* 18 *New York Journal of Legislation and Public Policy* 795, 822 (footnote omitted) (2015).
[159] Roe, *supra* n. 157, 565 (footnote omitted).

rationale.[160] Tellingly, the FSB has stated, that while reform of bankruptcy laws and the creation of RRAs may represent 'viable theoretical options to reduce the excessive reliance on funding through repos … and mitigate market disruptions', given the existence of 'practical difficulties'—in particular the need for fundamental changes to bankruptcy laws—the development of soft law norms on these issues is unlikely in the near future.[161]

What is more, it would seem that developments post-GFC have also limited the significance of statutory safe-harbours, [162] albeit that there remains some doubt as to the extent to which this will ultimately prove to be the case.[163] Following a series of reforms of global import, henceforth all systemically important banks, investment firms, and, financial market infrastructures (such as CCPs), will face administrative "resolution" rather than bankruptcy/insolvency proceedings.

In the EU, for example, the Bank Recovery and Resolution Directive (BRRD)[164] establishes a comprehensive recovery and resolution regime for banks and investment firms based around: (i) the submission by firms to the relevant authorities of recovery plans; (ii) early intervention powers, enabling the relevant authorities to help distressed firms; and (iii) the resolution of failed firms so as to mitigate any adverse impact on the financial system.[165] The broad effect of the BRRD, which has now been implemented into English law,[166] is to impose a *temporary* stay on the exercise of close-out rights by creditors where a firm has entered into resolution. The purpose of the temporary stay is to promote 'the continuity of a variety of critical economic functions that are dependent on maintaining counterparty relationships' and, by doing so, to avoid 'the rapid, disorderly, and potentially value-destructive closeout of financial

[160] *Ibid*., 567.
[161] FSB, *Strengthening Oversight and Regulation of Shadow Banking Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos* (29 Aug. 2013) 18-19.
[162] Paech, *supra* n. 144, 879-881.
[163] See below *infra* n.176 and accompanying text.
[164] Directive 2014/59/EU establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council.
[165] Four different resolution mechanisms are envisaged: sale of the business, the use of a bridge institution, bail-in, and asset separation.
[166] Transposition has been achieved by a combination of legislation (see, principally, the UK's special resolution regime (SRR), in the Banking Act 2009 (as amended)), and rules made by the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA).

contracts and liquidation of securities.'[167] Thus, as Paech notes, the stay affords 'breathing space … to allow the competent authority to evaluate the financial contracts of an ailing institution, and to decide which should be transferred to a healthy institution and which should remain in the ailing estate and be wound up.'[168] Once this process has been completed, creditors may not revive their termination rights in relation to transactions that have been salvaged by the authorities—say, by virtue of the transfer of assets to a private sector purchaser or to a bridge bank—since there is no longer any need for the creditor to close-out.[169] Rather, termination rights are only re-established 'in respect of those contracts which remain in the now isolated "toxic" part of the estate which is destined to be liquidated by recourse to ordinary liquidation proceedings.'[170]

Likewise, in the United States, Title I of the Dodd-Frank Act requires, as a first step, all globally systemically important financial institutions ('G-SIFIs') to submit for approval to the Federal Deposit Insurance Corporation ("FDIC") and the Federal Reserve so-called 'resolution plans'. Meanwhile, Title II of the Act establishes a new Orderly Liquidation Authority ('OLA'), the purpose of which is to provide the FDIC with the necessary powers to 'liquidate failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard.'[171] In this context, the OLA is designed to function 'as a complement to [the Bankruptcy Code], rather than as a stand-alone replacement.'[172] In short, Title II provides for an expedited procedure for the FDIC to be appointed as a receiver for a troubled financial institution, and vests it with significant discretion over the way in the orderly liquidation is conducted.[173] Specifically, the regime empowers the FDIC to transfer 'qualified financial contracts' (eg derivatives contracts), either to an acquiring investor or a bridge financial company.[174] What is more, in contrast to the Bankruptcy Code's exemption of qualified financial contracts from its automatic stay provisions, the OLA prohibits

[167] *Resolving Globally Active, Systemically Important, Financial Institutions* (A joint paper by the Federal Deposit Insurance Corporation and the Bank of England 10 Dec. 2012) para 19 (emphasis added) (http://www.bankofengland.co.uk/publications/Documents/news/2012/nr156.pdf).
[168] Paech, *supra* n. 144, 27 (footnotes omitted).
[169] *Ibid*.
[170] *Ibid*.
[171] Dodd-Frank Act s 204(a).
[172] Jodie Kirshner, *supra* n.158, 828.
[173] Dodd–Frank Act s 202(a)(1)(A)(iii).
[174] Dodd–Frank Act s 210(c)(9).

counterparties from terminating such contracts, and, by retaining their value for the new entity, is said to preserve market stability and certainty.[175]

Although, potentially, these reforms impact significantly on the importance of statutory safe-harbours and private contractual arrangements, there nevertheless seems to be some divergence of opinion as to how exactly US and UK resolution measures will "play out" in practice—and therefore how far the protections afforded to collateral-takers by way of statutory safe harbours and contractual arrangements extend. For example, according to Paech, in view of the fact that, for certain types of financial institutions at any rate, resolution procedures have now replaced bankruptcy/insolvency proceedings, the "[i]nsolvency of systemically important financial institutions will … be a well-nigh-redundant concept [and] safe harbours will … remain relevant only to the counterparties of failing financial institutions *other than* banks, investment firms and financial market infrastructures."[176] This view is, however, contentious. In the US, for example, there is some suggestion that the Bankruptcy Code remains the "first port of call" for distressed firms, and that the OLA resolution regime applies only in exceptional circumstances.[177] That is to say, it has been suggested that, properly interpreted, Title II of the Dodd-Frank Act prioritizes the use of the Bankruptcy Code over the OLA's resolution procedures, resulting in an ongoing high-profile role for safe-harbours in that jurisdiction.[178]

In this sense, news of the demise of safe-harbours for systemically important financial institutions—at least in the US context—may have been exaggerated. However, on closer inspection, an explanation for the supposed disjunction between the respective positions in the UK and the US on the continuing relevance of safe-harbours in the light of the implementation of new resolution regimes in each jurisdiction, may lie in the fact that, in the US, authorities have placed more confidence in, and have given greater weight to, the concept of firms' pre-emptive planning – ie Title I of Dodd-Frank. Thus, for example, according to Martin J Gruenberg, Chairman of Federal Deposit Insurance Corporation: "[i]f … *firms* are successful in their resolution planning, then [Dodd-Frank's OLA] would only be used in the *rare* instance where

[175] FDIC, *The Orderly Liquidation of Lehman Brothers Holdings Inc. under the Dodd-Frank Act*, (2011) 5 (No 2) FDIC Q, 31, 38 (<http://www.fdic.gov/bank/analytical/quarterly/2011_vol5_2/Article2.pdf>).
[176] *Supra*, n. 144, 881 (emphasis added).
[177] Thus according to Morrison *et al*, *supra* n.146: 'Title II of Dodd-Frank and many of its key regulatory interpreters expect bankruptcy to be the first line of resolution defense, with the [OLA] processes kicking in only if bankruptcy fails.' (footnote omitted) (1,043).
[178] Kirshner, *supra* n. 158: "Language in Titles I and II of the Dodd-Frank Act reserves the OLA for use only in the limited situations when existing bankruptcy law would be ineffectual." (footnote omitted) (828).

resolution under the Bankruptcy Code would have serious adverse effects on US financial stability."[179] This suggests that US Bankruptcy Code safe-harbours would continue to apply—even for systemically important institutions—provided their impact was not destablising (and is underpinned by an assumption that pre-emptive planning, as provided by Title I of Dodd-Frank, would facilitate this outcome).

On paper, recent efforts by regulators to construct and embed resolution regimes in the post crisis landscape are without doubt impressive. Although for the most part not animated by concerns about repo runs, regulators nevertheless hope that these measures will make repo runs less likely, and will mitigate the adverse effects of those which do take place. However, doubts about the exact relationship between bankruptcy/insolvency proceedings and resolution regimes – at least in the US – and the untested nature of resolution regimes more generally, illustrates that there is in fact much that remains unknown about how these new arrangements will ultimately fare when faced with the sorts multiple correlated failures that are characteristic of today's modern, global, highly interconnected, complex and often opaque markets. In view of the size of some of the institutions likely to be embroiled in a future crisis, and the likely scale of their globaloperations, creditor incentives to simultaneously 'storm the exits' and liquidate collateral in advance of the use by authorities of their formal resolution powers, is almost certain to have a destabilising effect on both counterparties and markets generally. For good or ill, policy-makers and regulators need to face up to the fact that, in worse case scenarios, government-backed resolution—that is to say, outright taxpayer funded bailout—is simply inevitable, and that other measures, however well intentioned, which are liable to exacerbate stresses within the financial system at a time when the certainty of government bailout is required, are at best highly problematic.

5. Conclusion

[179] See Implementation of the Dodd-Frank Act: Hearing Before the S Comm on Banking, Housing & Urban Affairs, 112th Cong. 82–88 (2011) (statement of Martin J Gruenberg, Chairman, Federal Deposit Insurance Corporation) (http://www.fdic.gov/news/news/speeches/chairman/spdec0611.html).

Whether directly or indirectly, financial markets play a vital role in helping to channel "funds from those with income in excess of their needs to those wishing to borrow",[180] and in helping contracting parties to 'hedge', or insure, against the risks associated with this process. In doing so, financial markets are said to help 'service' the financing needs of the 'real' economy and thus to help unlock latent wealth. As the GFC has amply demonstrated, however, to the extent that the activities associated with such markets impose uncompensated costs on third parties, the amount of financial services activity undertaken is regarded as suboptimal. Moreover, insofar as optimal levels of activity are impaired by market disruption, socially desirable projects are liable to go unfunded, causing economic activity—and, in turn, wealth—to contract.

Much academic—and other—literature has explored the various causes of the GFC, but, unsurprisingly, a good deal of blame has been attributed to 'regulatory failure', and, more pertinently, to a regulatory philosophy which embodied a belief in the enlightened self-interest of financial institutions to act in ways which were consistent with the public good, and which asserted that 'financial innovation, market completion and increased market liquidity [were] always and axiomatically beneficial'.[181] It is suggested that it was the malign grip of this philosophy which meant that although regulators had 'ample power' to act, they conspicuously 'chose not to use it'.[182] It is against such a background that this article set out to assess how, in the aftermath of the GFC, policy-makers and regulators—domestic, EU, and global—have sought to restore their damaged credibility by constructing new, more robust, regulatory and supervisory regimes which avert systemic crises. This process was explored through the lens of a high-profile facet of shadow banking, namely, repo agreements, which in certain policy-making circles are today regarded as having been a key component of the crisis. Here, policy-makers and regulators have been engaged in efforts to address a key vulnerability associated with repo transactions—the maturity mismatch between the short-term liabilities of a repo-borrower and its longer-term assets, which has the potential to trigger a 'repo run'.

In this context, the article assessed the merits or otherwise of a number of regulatory options which have been adopted (or proposed) in the context of repo transactions as a means of

[180] *Committee to Review the Functioning of Financial Institutions* (Cmnd 7937), para 101, (1980).
[181] Lord Adair Turner, "Economics, conventional wisdom and public policy" (Speech by Chairman, FSA) (Institute for New Economic Thinking Inaugural Conference, Cambridge, April 2010).
[182] FCIC Report, *supra* n. 3, xviii.

mitigating the risk of such runs, and to draw broader conclusions about financial regulation and, in turn, financial markets from that assessment. In reviewing these options, the overarching aim of the article was not necessarily to advocate for or against any, or all, of the initiatives discussed, but to be candid about the dearth of *effective* options that policy-makers and regulators have at their disposal in resolving the problem of repo runs, and, in doing so, to underscore the significance of this for financial regulation more broadly. The analysis revealed that none of the policy options discussed represents the proverbial 'silver-bullet', and that both individually and collectively they suffer from acute weaknesses that are likely to limit their effectiveness in any future crisis.[183]

Yet, notwithstanding a well-documented record of regulatory failings pre-GFC, and the equivocal nature of the merits of the regulatory options reviewed, policy-makers and regulators remain remarkably sanguine about their abilities to bring an ever-increasing range of financial activities more fully within the regulatory fold—and to subject this activity to more intensive ongoing scrutiny. While this expansive approach may not necessarily be regarded as unpalatable, it is, nevertheless, highly problematic inasmuch as it suggests that the risks posed by shadow banking in general, and repos in particular, can be effectively neutralized by the implementation of ever-more nuanced regulatory measures. Rather than provide a clear case for regulatory optimism, the discussion reveals a chilling and inconvenient truth: namely, that there are, in fact, very real limits to what regulation (of whatever stripe) can realistically achieve in forestalling repo runs and systemic crises. In this respect, there is a danger that the same so-called "hubris risk" (ie the risk of 'blinding over-confidence') that leading UK regulator Andrew Bailey warned the financial services *firms* to be wary of,[184] will come to afflict financial market policy-makers and regulators. Put differently, there is a very real danger that policy-makers and regulators will repeat the mistakes of yesteryear by substituting their misplaced faith pre-GFC in the power of market discipline, with an ill-judged conviction post-crisis in their capacities to build regulatory

[183] What is more, even where there is a consensus about the *principled* merits a particular policy option, *practical* difficulties—in particular how any new reform operates in the context of cross-border transactions—are likely to militate against their effectiveness, since much will turn on whether the reforms are implemented in harmonized manner. See, eg, Yesha Yadav and Dermot Turing, *The Extraterritorial Regulation of Clearinghouses* 2(2) *Journal of Financial Regulation* 1 (2016).

[184] Culture in financial services—a regulator's perspective (Speech given when Deputy Governor of the Bank of England for Prudential Regulation and Chief Executive Officer, Prudential Regulation Authority) City Week 2016 Conference, 9 May 2016 (http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech901.pdf).

regimes which can cabin risks and, thereby, avoid the need for public-sector bailouts. It is suggested that such over-confidence is liable to lull us into a false sense of security about how robust our new regulatory regimes really are, and, moreover, that it is likely to deflect policy-makers and regulators away from the real issue at hand: the more fundamental and logically prior question of what sort of financial markets we really want, and what sort of financial failures we are ultimately willing to pay for when things—inevitably—go wrong again. Failure to address these issues is not only likely to have serious implications for the future health of our financial markets, but for the hope of a fairer brand of capitalism, and therefore, for capitalism itself.